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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/075,669	02/13/2002	Kevin E. Boyle	TRW(RG)5832	2678

26294 7590 08/29/2003

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EXAMINER

YEAGLEY, DANIEL S

ART UNIT	PAPER NUMBER
3611	

DATE MAILED: 08/29/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/075,669	BOYLE ET AL.
	Examiner Daniel Yeagley	Art Unit 3611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 13 February 2002.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) 1-8, 14-16, 28 and 2027 is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 9-13, 17-19, 21-26, 29 and 30 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on 13 February 2002 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____.
2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)
3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,6. 6) Other: _____

DETAILED ACTION

1. The IDS filed 2/13/02 and 6/9/03, the Change of Address filed 4/1/03 and the Election requirement filed 6/2/03 has been acknowledged.
2. Applicant's election of Species II in Paper No. 5 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Drawings

delete all claims

3. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, as recited in claim 19 and claim 29; the "motor control circuitry operative to cause the generation of back EMF in the motor in order to resist movement of the steering member toward a straight ahead position" must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.
4. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. The claims are objected to because they include reference to characters, which are not described in the specification. Reference characters recited in the detailed description and the drawings should coincide with the recitation of the same element or group of elements recited in the claims to avoid confusion with other numbers or characters, which may appear in the claims.

all claims were deleted

- a. Note that the terms "spring mechanism" and "first and second means" recited in the claims were not found in the detailed description of the invention and therefore are unclear.
- b. Claim 9 is objected to because the last paragraph appears to be an incomplete sentence.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for "a piston 100 being located axially between a single spring 170 and a steering member 66", does not reasonably provide enablement for "a piston being located **axially** between an electric motor and a single spring". The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the invention commensurate in scope with these claims. Note that the electric motor is not disclosed axially with the piston and the spring.

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9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 12-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

a. Regarding claims 12 and 25, lines 2 "an electric motor" it is not clear if applicant is referring to the electric motor 78 already recited in the independent claims or if applicant is attempting to claim a second electric motor.

b. Regarding claim 24, line 2 the term "said housing" lacks antecedent basis.

c. Regarding claim 25, line 5 the term "said single spring" lacks antecedent basis.

d. Regarding claim 13, both words "means" are preceded by the word(s) "spaced apart" in an attempt to use a "means" clause to recite a claim element as a means for performing a specified function. However, since no function is specified by the word(s) preceding "means," it is impossible to determine the equivalents of the element, as required by 35 U.S.C. 112, sixth paragraph. See *Ex parte Klumb*, 159 USPQ 694 (Bd. App. 1967).

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 9 - 13, 17 - 19, 21 - 26, 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohmura et al; '494 in view of Cartwright '742 in further view of Shimizu '692.

Ohmura shows a steering system having steerable rear wheels (figure 1), wherein the steering system of Ohmura comprises an axle housing 40 supporting rear wheels wherein an intermediate portion defines a chamber (figure 2) comprising a ball nut 34 fixed axially therein and associated with a screw thread portion 84 of an elongated steering member 30 which is fixed from rotation and supported in the chamber (column 3, line 24-35, column 5, line 11-13) and includes a motor control circuitry operative to cause a generation readable as being back EMF in an electric motor 32 to resist movement of the steering member toward a straight ahead position (column 3-5, line 53-10), wherein the electric motor is outside the chamber and having a drive means 50 extending through an opening in the axle housing spaced from an intermediate portion of the axle and connected between the motor and the ball nut for rotating the ball nut to drive the steering member axially upon actuation of the motor and further includes a spring mechanism 36 acting between an intermediate assembly fixed for movement with the steering member and the

axle, wherein the spring mechanism comprises a single spring 98 biasing the steering member in opposite axial directions toward a straight ahead position and includes housing stops (first means) 100,102 and movable steering stops (second means) 90,92 (column 5) but lacked the drive means being a drive belt and further lacked the takeoff assembly fixed to the steering member as claimed.

Cartwright discloses a steering system comprises an axle housing supporting wheels (figure 2) wherein an intermediate portion of the axle housing defines a chamber (figure 3) comprising a ball nut 86 fixed axially therein and associated with a screw thread portion 84 of an elongated steering member 50 and supported in the chamber similar to that of Ohmura, wherein the steering member of Cartwright steering system is free of rack teeth and further discloses the art of utilizing a steering system comprising the prior art of a takeoff assembly having a piston fixed for movement with the steering member wherein a portion of the takeoff assembly projects radially from an intermediate portion of the axle housing such that a first and a second steering linkage is connected with the projecting portion for transmitting movement of the takeoff assembly to first and second wheels as claimed but failed to show a drive means being a drive belt as claimed.

Shimizu discloses a steering system comprises an axle housing for supporting wheels (figure 2) wherein an intermediate portion of the axle housing defines a chamber comprising a ball nut 43 fixed axially therein and associated with a screw thread portion 42 of an elongated steering member 21 and supported in the chamber similar to that of Ohmura, wherein the steering member of Shimizu steering system discloses the prior art of utilizing a belt drive means

for driving the steering member wherein the drive belt is connected between the electric motor and the ball nut for rotating the ball nut to drive the steering member as claimed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have combined the known features of the various steering systems of Ohmura electric motor driven ball nut and spring centered steering system with a modified belt driven means such as shown by Shimizu belt driven steering system to replace a gear driven means simply as a matter of design choice dependent upon users preference and to have further modified the steering system of Ohmura as modified by the belt driven means of Shimizu with a modified steering member incorporating a piston type takeoff assembly with center extending steering linkages extending from an opening in the intermediate portion of the axle housing such as shown by Cartwright '742 to further enhance the steering system of Ohmura utilizing a takeoff assembly with piston and steering linkage to further improve the apparatus to effect turning of the steerable wheels as suggested by Cartwright.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Jung et al '774 shows a steering system having a belt driven ball nut steering member with a single spring mechanism.

Ohmura 648 and 592, Takehara et al '057, Mori et al '480 and Takaaki JP'881 show a steering system for steerable rear wheels.

Chikuma et al (IDS)'921 shows a steering system for steerable rear wheels with a single spring mechanism.

Hovanchak '(IDS)'813, Westercamp et al (IDS)'971 and Lang (IDS)'631 show a steering system with a takeoff assembly.

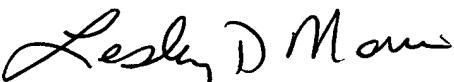
James '552 shows a takeoff assembly with a locking device.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Yeagley whose telephone number is 703-305-0838. The examiner can normally be reached on Mon. - Fri; first Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley D Morris can be reached on 703-308-0629. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9326 for regular communications and 703-872-9327 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1113.

D.Y.
August 22, 2003


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